

POLLINATION OF THE ERICACEAE: V. GAYLUSSACIA
BACCATA¹

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GAYLUSSACIA BACCATA (Wang.) Koch, the black huckleberry, is an extremely common shrub in sterile pastures and granitic hillsides of southern Maine where it grows in the most unfavorable of locations. The flowers are grouped in one-sided racemes on the wood of the previous season. At the time of blooming in June the new growth, already several inches in length, is rapidly concealing the flower clusters from above. The number of flowers in an inflorescence is from 3 to 8, the average of 26 being 6.02, and the number of racemes on a branch was found to range from 3 to 8.

The flowers vary from dark red to light pink. Both the pedicels and the two bractlets are reddish as are the bracts. The latter, however, are early deciduous, only an occasional one being found persistent at the time of anthesis.

The tapering corolla is from 5.5 mm. to 6.5 mm. in length. It narrows slightly at the mouth leaving an opening only 1.5 mm. in diameter which is partially filled by the round capitate stigma. Like the foliage both the calyx and outside of the corolla are covered with globules of waxy secretion.

The pistil consists of an inferior 10-celled ovary bearing on its apical surface a thick, fleshy nectary (Fig. 1, C) which surrounds the base of the style. The very glutinous stigma is obscurely five-lobed (FIG. 1, B).

The yellow anthers terminate in long tubes which open by elongated pores (FIG. 1, D). The broad, flat filaments with the aid of their ciliate margins form a collar around the nectary.

The flowers were found to vary in size and shape between two extremes. The more common type was long, slender and tapering with the stigma exactly in the mouth of the corolla (FIG. 1, F). The other type was shorter and broader with the stigma slightly exerted (FIG. 1, E). Similar variations in size have been reported in *Vaccinium vitis-idaea* by Warnstorff and also by Warming.²

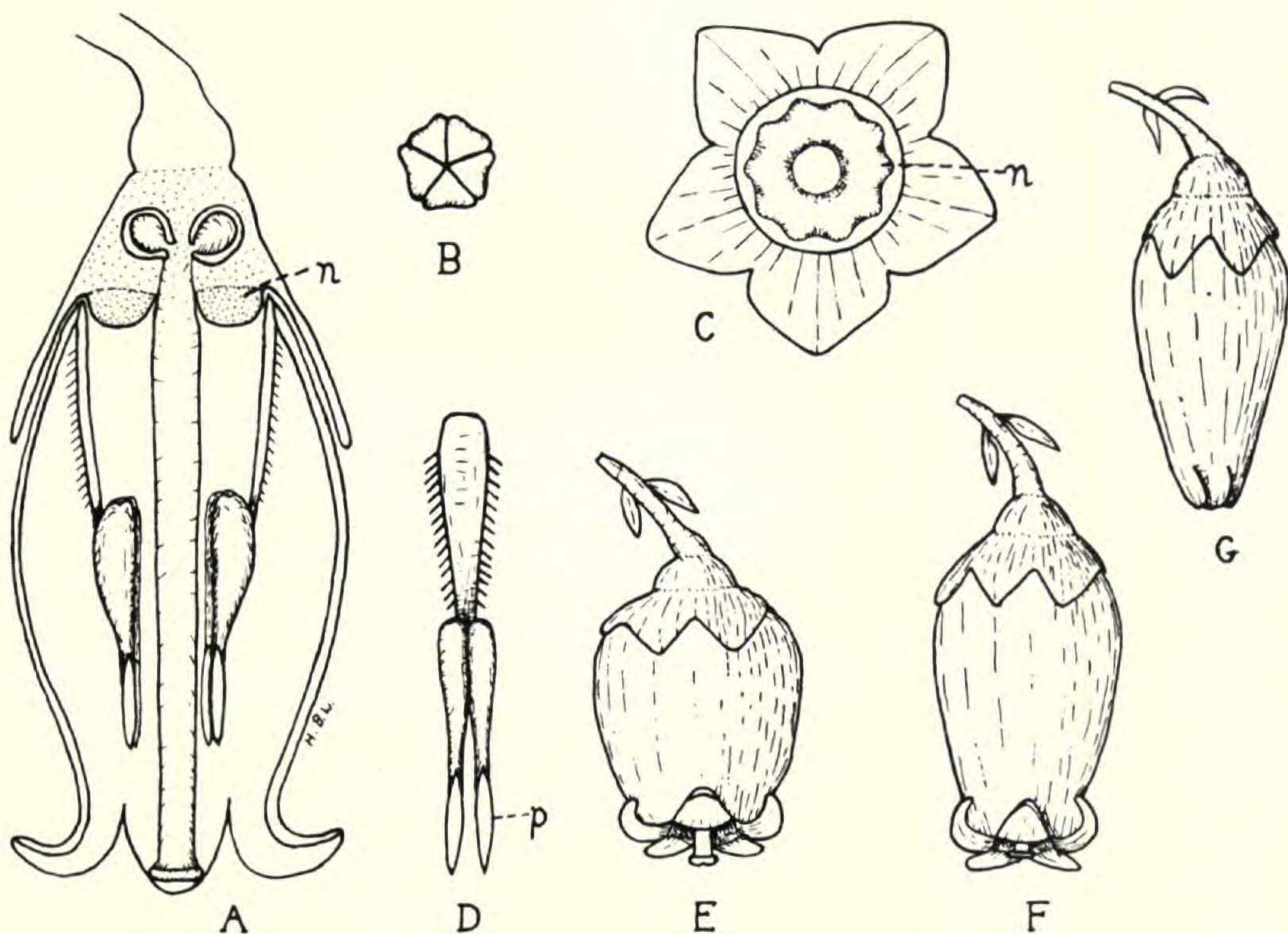
The flowers are homogamous. In mature buds beginning to open, the stigma was already glutinous, the anther pores open and the

¹ Contribution from the Biology Department, University of Louisville.

² Knuth, P. and J. R. Ainsworth Davis. Handbook of Flower Pollination, p. 30, 1909.

pollen mature. Anthesis lasts for several days at the conclusion of which the corolla and stamens fall off together. The style persists a little longer.

Usually nectar secretion is rather scanty, a few drops being present on the nectary near the base of the style. After a rainy night many flowers were found to have secreted from one to two mm. of nectar which was held in place in the center of the flower by the filaments. Old flowers, which could be recognized by their easily dislodged



corollas, were entirely devoid of nectar. This shows that nectar secretion ceases entirely soon after fertilization. By the afternoon of the same day, a warm sunny day, nearly all the nectar had disappeared. Flowers kept for 40 hours in a cool, damp cellar accumulated as much as 4 mm. of nectar. That this was not condensation of moisture was shown by the fact that old flowers again contained no nectar.

The flowers have a slightly sweetish odor.

Pollination of the flowers is accomplished chiefly by Andrenid and honeybees, but the number of visits received by the flowers was small. Insect visitors must pass their tongues between the style and anthers, thus shaking the pollen onto their faces. When such an insect visits

the next flower, the pollen-covered parts strike the protruding stigma on the glutinous surface of which pollen clings readily, completing the process of cross-pollination. Nearly all the stigmas examined had pollen clinging to them.

In the absence of insect visits pollen falling from the anther tubes is almost certain to strike the glutinous stigma. In order to determine whether self-pollination results in a set of fruit, five plants, bearing respectively 26, 27, 16, 12, and 30 buds were covered with cheese cloth bags on June 21. When examined on Aug. 22, not a single fruit was found. One plant had died but the others had grown vigorously. The set of fruit on the neighboring plants was rather light due probably to the paucity of insect visits but many plants had set from two to five berries. The evidence indicates that *Gaylussacia baccata* is self-sterile and entirely dependent upon insects for cross-pollination.

The following insects were sucking nectar except where otherwise indicated. All insects were collected at Waldoboro, Maine, from June 15 to June 21.

HYMENOPTERA. APOIDEA: *Apis mellifera* L. ♂, *Andrena vicina* Smith ♀, *A. lata* Viereck ♀, collecting pollen, *Nomada cuneata* Robt. ♀.

LEPIDOPTERA. NYMPHALIDAE: *Brenthis myrina* Cr.; LYCAENIDAE: *Incisalia nippon* Hbn.

THYSANOPTERA. *Thrips* sp., common wandering around in flowers.

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Volume 42, no. 500, including pages 277-308 and plates 606-625, was issued 13 August, 1940.